卫雅珂/Yake WEI

Ph.D candidate
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Homepage

Education

Renmin University of China — Beijing, China
Ph.D Candidate in Artificial Intelligence — Sep. 2021 - Present
Advisor: *Prof.* Di Hu

Carnegie Mellon University — Pittsburgh, USA
Visiting Scholar — Dec. 2023 - Aug. 2024
Advisor: *Prof.* Fernando De la Torre Frade

University of Electronic Science and Technology of China — Chengdu, China
B.E. in Computer Science and Technology — Sep. 2017 - Jun. 2021

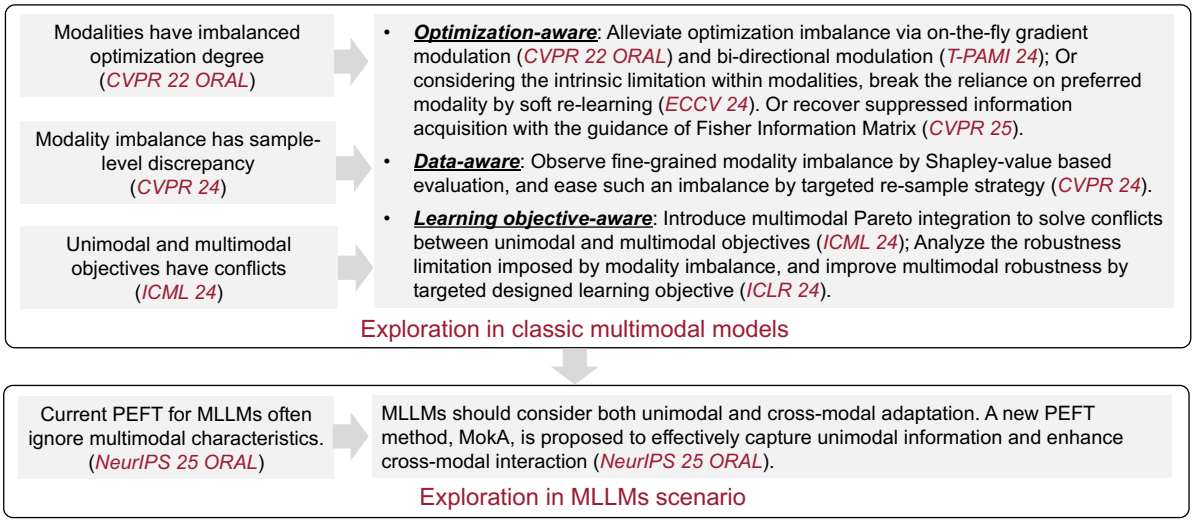
Selected Awards and Scholarships

- **Baidu Scholarship** (10 Ph.D students worldwide), 2024.
- **China National Scholarship for Ph.D student** (highest student honor in China), 2024.
- Outstanding Graduate Award (highest honor for graduates set by Sichuan province), 2021.
- Outstanding Graduate of University of Electronic Science and Technology of China, 2021.

Research Interests

Interested in the inherent learning mechanism of perceiving, formulating, and understanding the environment with heterogeneous information from multiple modalities, *e.g., vision, sound, text.*

Part 1. Focus on **building Multimodal LLMs by considering the characteristics of diverse multimodal scenarios**. For now, we have provided a new PEFT pipeline for MLLMs, *MokA*, which ensures both cross-modal and unimodal adaptation. MokA has been accepted and selected as an ORAL paper by NeurIPS 2025.
Part 2. In the paper presented at CVPR 2022 (ORAL), **introduce the research topic of "Balanced Multimodal Learning"**. Highlight a pervasive issue in multimodal learning, where information utilization of certain modality can be undesirably suppressed by others. Then conduct a series of systematic studies to alleviate this issue.



Paper list

[1] **Yake Wei**, Yu Miao, Dongzhan Zhou, and Di Hu. Moka: Multimodal low-rank adaptation for mllms. *Advances in Neural Information Processing Systems (**NeurIPS**)*, 2025, **ORAL (1.46% of accepted papers)**.

[2] **Yake Wei**, Di Hu, Henghui Du, and Ji-Rong Wen. On-the-fly modulation for balanced multimodal learning. *IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**)*, 2024.

[3] **Yake Wei** and Di Hu. Mmpareto: boosting multimodal learning with innocent unimodal assistance. *International Conference on Machine Learning (**ICML**)*, 2024.

[4] **Yake Wei**, Ruoxuan Feng, Zihe Wang, and Di Hu. Enhancing multimodal cooperation via sample-level modality valuation. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2024.

[5] **Yake Wei**, Siwei Li, Ruoxuan Feng, and Di Hu. Diagnosing and re-learning for balanced multimodal learning. *European Conference on Computer Vision (**ECCV**)*, 2024.

[6] Di Hu, **Yake Wei**, Rui Qian, Weiyao Lin, Ruihua Song, and Ji-Rong Wen. Class-aware sounding objects localization via audiovisual correspondence. *IEEE Transactions on Pattern Analysis and Machine Intelligence (**T-PAMI**)*, 2021.

[7] Xiaokang Peng*, **Yake Wei***, Andong Deng, Dong Wang, and Di Hu. Balanced multimodal learning via on-the-fly gradient modulation. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2022. (*** equal contribution, ORAL**).

[8] Chengxiang Huang*, **Yake Wei***, Zequn Yang, and Di Hu. Adaptive unimodal regulation for balanced multimodal information acquisition. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2022. (*** equal contribution**).

[9] Guangyao Li*, **Yake Wei***, Yapeng Tian*, Chenliang Xu, Ji-Rong Wen, and Di Hu. Learning to answer questions in dynamic audio-visual scenarios. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2022. (*** equal contribution, ORAL**).

[10] Zequn Yang, **Yake Wei**, Ce Liang, and Di Hu. Quantifying and enhancing multi-modal robustness with modality preference. *The Twelfth International Conference on Learning Representations (**ICLR**)*, 2024.

[11] Haotian Ni, **Yake Wei**, Hang Liu, Gong Chen, Chong Peng, Hao Lin, and Di Hu. Rollingq: reviving the cooperation dynamics in multimodal transformer. *International Conference on Machine Learning (**ICML**)*, 2025.

[12] Ruotian Peng, Haiying He, **Yake Wei**, Yandong Wen, and Di Hu. Patch matters: training-free fine-grained image caption enhancement via local perception. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**)*, 2025.

[13] Zequn Yang, Han Zhang, **Yake Wei**, Zheng Wang, Feiping Nie, and Di Hu. Geometric-inspired graph-based incomplete multi-view clustering. *Pattern Recognition*, 2024.

Surveys

[1] **Yake Wei**, Di Hu, Yapeng Tian, and Xuelong Li. Learning in audio-visual context: A review, analysis, and new perspective. *arXiv preprint arXiv:2208.09579*, 2022.

[2] Qingyang Zhang, **Yake Wei**, Zongbo Han, Huazhu Fu, Xi Peng, Cheng Deng, Qinghua Hu, Cai Xu, Jie Wen, Di Hu, et al. Multimodal fusion on low-quality data: A comprehensive survey. *arXiv preprint arXiv:2404.18947*, 2024.

Organized Events

- "Let's talk about balanced multimodal learning", BML workshop, 2025. Organizer.
  Initiated the BML Research Community and organized online workshops.

Invited Presentations

- "Balanced Multimodal Learning: Past, Present, and Future"
  Invited talk at *VALSE Student Workshop 2025.*
- "Balanced Multimodal Learning"
  Invited talk at *Peking University, CoRe 2025.*
- "Balanced Multimodal Learning"
  Invited talk at *Global PhD Gathering, Pujiang AI Conference*, 2024.
- "Balanced Multimodal Learning"
  Invited talk at *Virginia Tech*, 2024.
- "Balanced Multimodal Learning"
  Invited talk by *TechBeat*, 2024.
- "Exploration of Audio-visual Scene Understanding and Multimodal Learning Mechanisms"
  Invited talk at *BAAI Conference*, 2022.

Professional Service

Journal Reviewer:

- IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI)
- IEEE Transactions on Circuits and Systems for Video Technology (T-CSVT)
- IEEE Transactions on Multimedia (T-MM)
- Pattern Recognition

Conference Reviewer:

- International Conference on Machine Learning (ICML)
- Annual Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Learning Representations (ICLR)
- IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
- International Conference on Computer Vision (ICCV)
- European Conference on Computer Vision (ECCV)